

## PHY 491 - 2013

### Atomic, Molecular, and Condensed Matter Physics

#### Problem Set 4

1. Find the terms for the electron configuration  $p^3$  (10 pt)
2. Find the terms for the configuration  $p^4$ . **Hint:** Start from  $p^6$  and think of “subtracting” electrons; use the results obtained in class. You have to provide a justification, though (5 pt)
3. Electronic configurations of different elements are summarized in many places, see for example <http://physics.nist.gov/PhysRefData/DFTdata/configuration.html>. Consider the ion  $\text{Mn}^{2+}$  ( $Z=25$ ), which is encountered in many compounds. In this ion,  $4s^2$ -electrons are stripped away from the atom. Use the Hund rules to find the ground term of the ion. Find the magnetic moment. (5 pt)

**The solution is due on October 2.**